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YOUR FARMHOUSE . . .

# HOW TO PLAN REMODELING



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# How to Plan REMODELING

So you are planning to remodel your old farmhouse! It is half a century at least since Grandfather built it. It was a good house by the standards of those days. It is probably a good house yet. Otherwise you would not want to make it over.

Age can bring out a lot of weaknesses and faults, of course, even in a well-built house. Also, your house may be too large or too small for your present family. In any case, the old house may not be suited to modern ways of living and doing things. That is why you are going to remodel.

It would be different if the old house were not sound. Defects in a house that was not well planned or well built at the start or that has not been kept repaired and painted, may make it of little value and not worth the cost of remodeling.

Look at the house on the cover. It is a good model to use in studying remodeling. It was an old house, but well built and sound. It was remodeled by the Hubbards, of Wisconsin, into the home shown. Besides Mr. and Mrs. Hubbard, the family includes a married daughter and her husband. They entertain a great deal and often have overnight guests. They changed the old house to meet their own special needs.

Any house can, of course, be remodeled in many different ways. Every family is different from every other family. The needs of the family that is to live in the house and the amount of money they want to spend on remodeling are the first things to consider.

You may have children. Your family may include Grandmother or Grandfather. The way the Hubbards remodeled their house might not be at all suitable for you.

Regardless of differences in families there are certain principles that apply in remodeling any house. The Hubbards replanned their house with help from the United States Department of Agriculture and the University of Wisconsin as part of a farmhouse research project.

In following the replanning of the Hubbards' house, as shown in this publication, you also can learn principles of planning. The plans, as shown, are slightly different from those of the house as it actually was remodeled, but only to show other possibilities or another satisfactory arrangement.

Certainly the Hubbards' remodeled house is more attractive and livable than the old one. It shows the results of careful planning right from the beginning. Equally good results are possible with many old houses. Even the one that Grandfather built, old-fashioned as it now seems, can be made into a more livable house. The job will take time and study, but if done right, you will be proud of your "new" home.

So, in following through the replanning of the Hubbards' house, keep in mind the desired space and arrangements for all the household activities and living needs of the family that is to live in it. You will learn many sound principles to apply when you plan the remodeling of your own house.

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# Is it Worth Remodeling?

Even before any planning is begun, important questions must be answered. It will not pay, of course, to make over any house that is not sound. Carrying out a thorough remodeling job generally takes less material but more labor than new construction. Usually it is cheaper to build a new house than to completely rebuild an old one.

**What will needed repairs cost?** Look the house over carefully. Check it over from foundation to roof (fig. 1). The foundation may need repairs or joists may need replacing. If the chimney is in bad condition, it may have to be rebuilt. Holes in the flashings—the metal where sloping roofs join, around chimneys, or other places where a watertight seal is needed—may cause leaks. New shingles or other roofing may be needed. Check also the condition of siding, window and door frames, and downspouts to see whether they need to be replaced.

**Is the building in a good location?** The site may be poorly drained. Can this fault be corrected? What will it cost? The house should be on ground high enough not to be under water during heavy rains. The water table should not be so high as to make sewage disposal difficult. Exposure to the full sweep of winter winds may make the house hard to heat. Easy access to the highway is also something to think about.

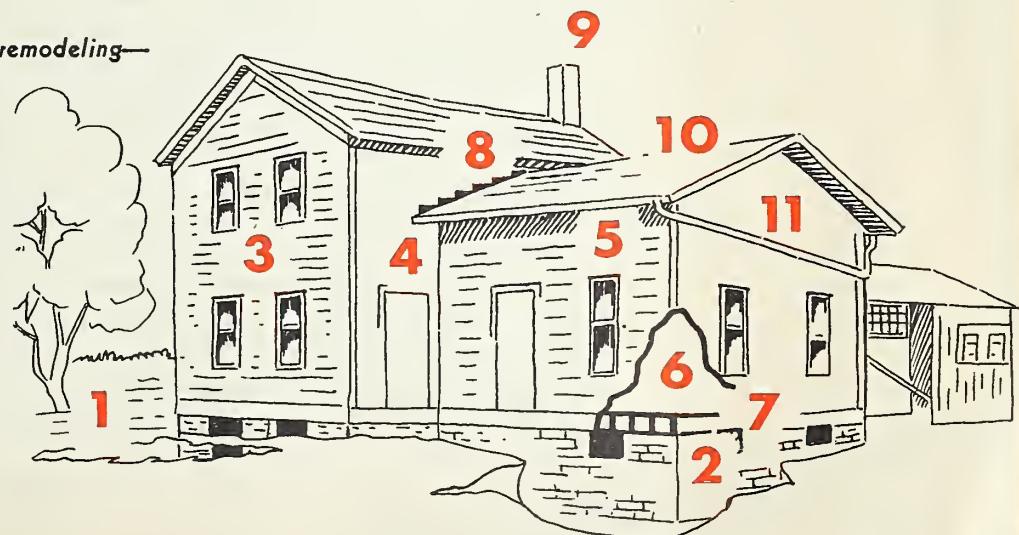
**Is there a safe and plentiful water supply?** Have the water tested. Figure needs on the basis of at least 50 gallons a day for each person. Remember also the needs for watering livestock. Milk cows will each need an average of 20 gallons a day and sheep or hogs, 2 gallons each.

**Will remodeling be a good investment?** That is the question all these other questions lead up to. The answer is important in your planning.

Certainly, as you think about these things, you will find that remodeling calls for as much thought and as careful planning as new building. Avoid especially putting costly utilities in a house that first of all needs rebuilding or rearrangement.

Figure 1.—Check before remodeling—

- 1 Site drainage
- 2 Foundations and footings
- 3 Exterior wall
- 4 Door frames
- 5 Window frames
- 6 Interior partitions
- 7 Floors
- 8 Flashing
- 9 Chimneys
- 10 Roof
- 11 Gutters and downspouts



# House and Farmstead

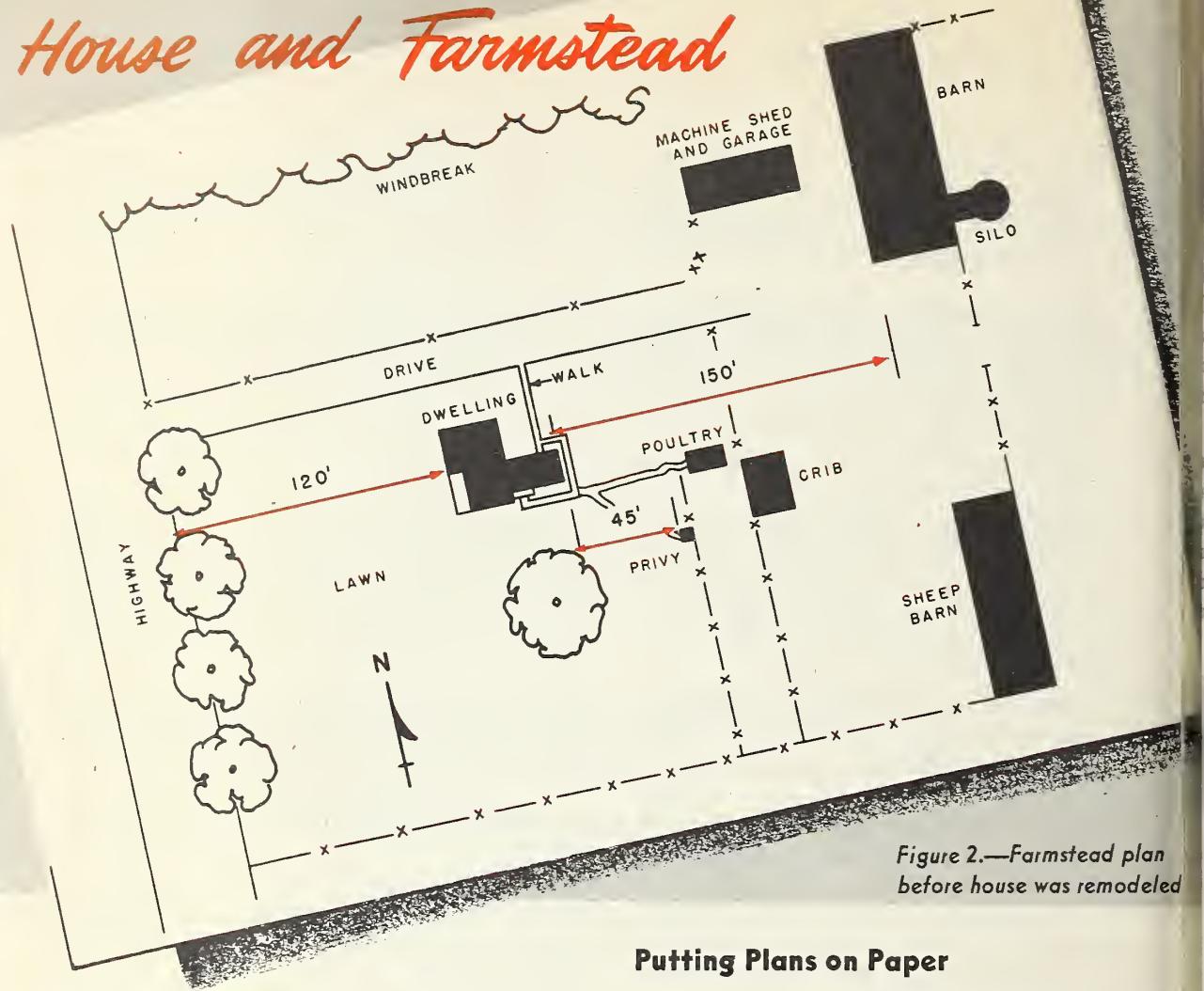


Figure 2.—Farmstead plan before house was remodeled

## Planning for the Future

The Hubbard house passed all these tests, so they decided to modernize it. The next step was to decide what should be done first.

Again, they made haste slowly. Before starting *anything*, they thought of *everything* to be done. They planned their entire house as they thought they wanted it. Do the same with your house, even if some things cannot be done right away.

Anything done now will affect what may be done in the future. You will not want to put in the bathroom, for example, until you know exactly where it should be when the house is completely remodeled. Moving plumbing is expensive.

The heating system also, both the type and the way it is put in, will depend on the permanent room arrangement.

## Putting Plans on Paper

The Chinese have an old saying that one picture is worth 10,000 words. As the Hubbards thought about a long-range remodeling program, they wrote out their ideas in the order in which each improvement was to be made. They worked out their plan on paper in rough drawings. In this way they could see what their remodeled house would look like when done. It is also easier and cheaper to make changes or correct mistakes on paper than in the building, and before rather than after remodeling starts.

Any contractor or carpenter needs a complete plan. It helps him in making cost estimates and in doing the work. He needs exact measurements.

An architect prepared the Hubbards' plans and they are convinced that he saved them money. Your State agricultural college or county agent may be able to help you find a good architect who has had experience in rural planning.

## Making the Master Plans

The house is only a part of a big picture that includes everything around it. Your farmhouse, for example, is a part of your farmstead. Other parts include the barns and other buildings, drives and lanes, the well, garden, orchard, and fields. All these fit together into a unit. They make up the plant in which the family lives and works. The way in which the house fits with the other parts may affect the operation of the farm, family income, health, and joy of living. It may also affect the ease with which the house is run.

The Hubbards made a plan of their entire farmstead (fig. 2). They put down the size and position of all buildings, walks, drives, wells, trees and other plantings. They used a scale of one-sixteenth inch for each foot of the farmstead in making the drawing. Sizes and distances were not always measured accurately, however, as this is not necessary.

Once the farmstead plan was finished, they soon found they needed house plans so they could consider house and farmstead together. They therefore drew up their master first-floor plan (fig. 3). They measured accurately and drew this plan carefully to scale. They used a scale larger than for the farmstead plan—one-fourth inch to 1 foot. The floor plan showed outside walls, partitions, doors, windows, chimneys, stairs, and fixed cabinets. Dimensions shown included the thickness of interior and exterior walls.

## Fitting House to Farmstead

The Hubbards studied their plans closely for good and bad points. They noted how the house was situated since this affects remodeling plans. For example, it may be desirable to relocate rooms, doors, or windows. A house can be moved but this may not be practicable.

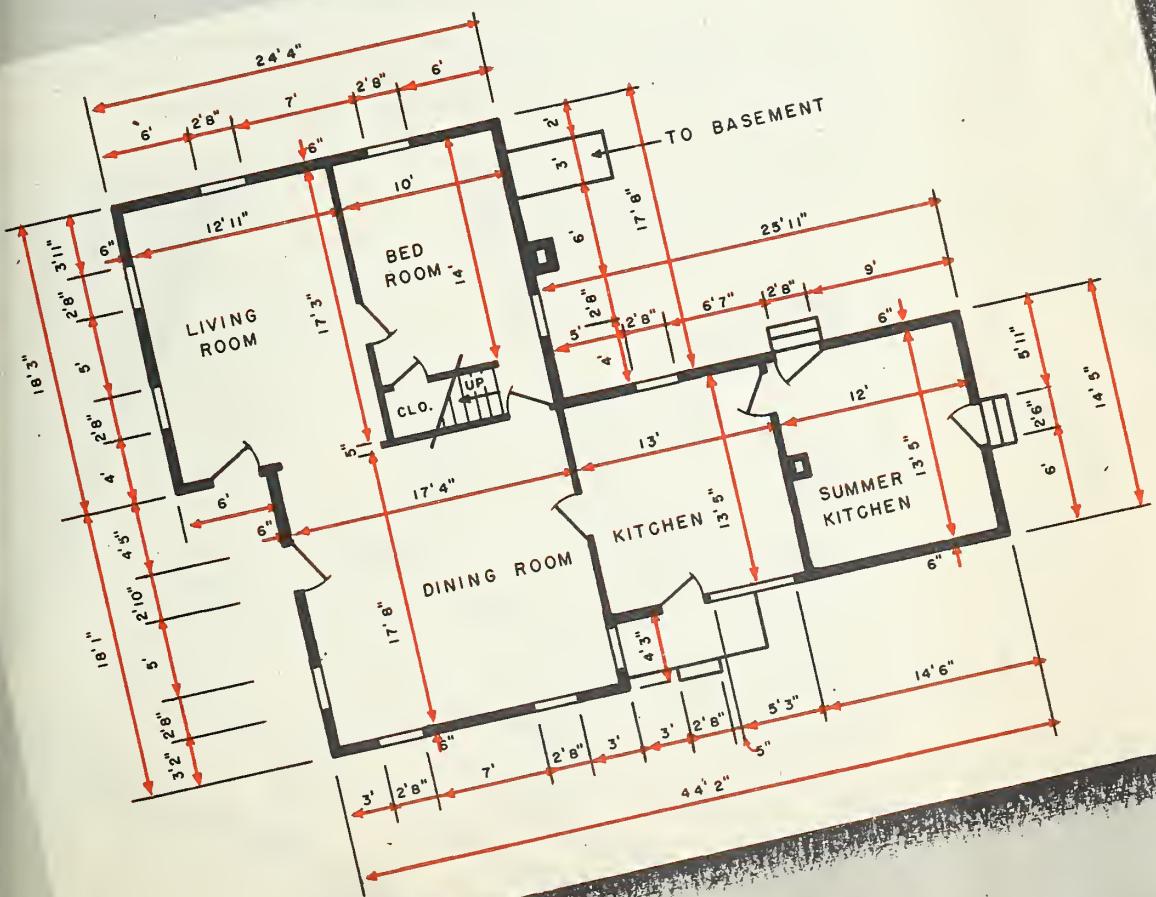


Figure 3.—Measuring first floor, before remodeling

The Hubbard house is well located with respect to prevailing winds. Winds blow toward, not from, the farm buildings and lots. Barnyard odors are carried away from, not into, the house.

If your house is in the South, you will want it so placed as to get summer breezes and shade from trees. In the North, on the other hand, you will want your most-used rooms to catch the winter sun. You also want the house to have some protection from the winter winds.

On the Hubbard farmstead originally there were no trees or shrubs to break the northern winds. A windbreak of Norway spruce was therefore planted. Large elms along the road offer some protection from west winds (fig. 2).

The Hubbard house is well back from the highway. You will want yours at least 100 feet away. That will insure reasonable safety for children and avoid highway noise and dust. Fortunately, the Hubbard family does not have to cross the highway to reach the barn or pasture. The farmhouse is at least 150 feet away from any building where hay is stored. That is as it should be to provide safety from fire.

All was not perfect on the Hubbard farmstead. They soon saw this when they studied each room in relation to the farmstead plan.

The entrances, for example, were badly placed with respect to the drive and farm buildings. There was not even a walk to the front door. As a result, that entrance was never used.

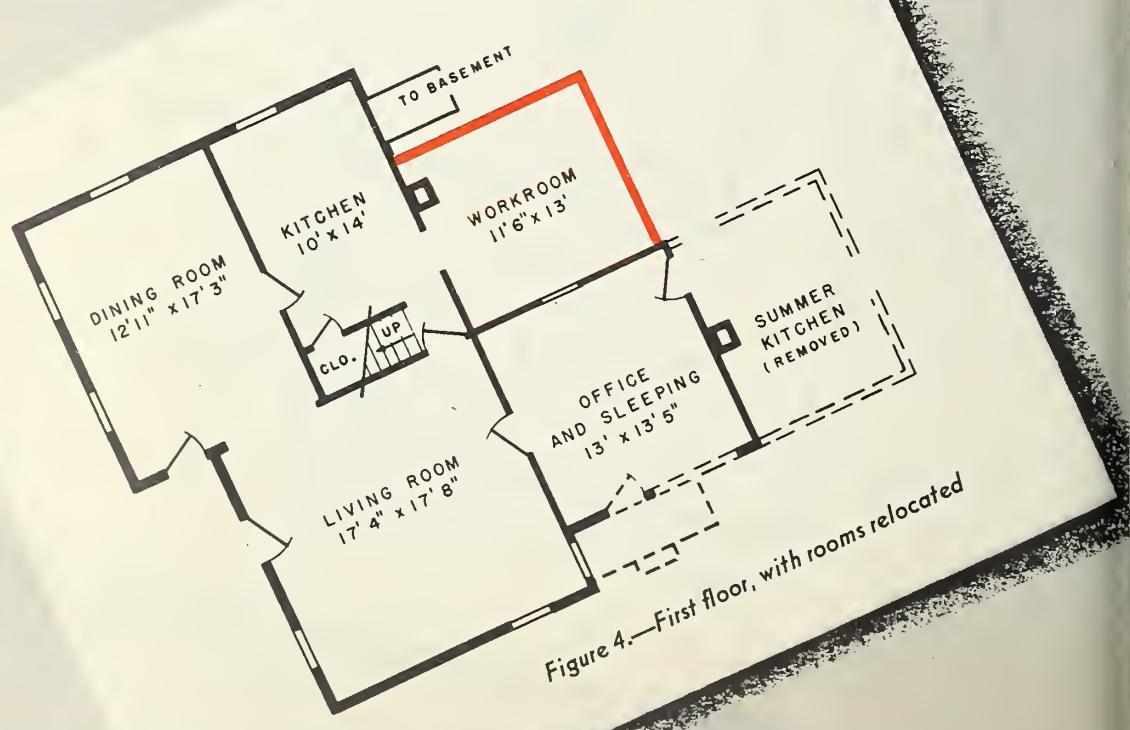
Another point: To get from the drive to the back entrance, they had to walk clear around the rear wing or go through the summer kitchen, which was shut off in winter because it could not be heated.

Notice the kitchen. It did not give a good view of either entrance drive or barn.

The best location for the new kitchen is probably the present bedroom. It permits a view of the highway, drive, and farm buildings. It is also close to the drive and has northern exposure for a window over the sink.

The Hubbards say they lived in the dining room instead of the living room before they remodeled. Why? Because it was larger and sunnier and had just as good a view as the living room.

Why not make the old dining room the new living room? That is the way they did it. Instead of changing their master plan, they placed thin tissue tracing paper over it to make the suggested changes. They labeled the bedroom as the kitchen, the living room as the dining room, and the old dining room as the living room.



## Consider the Family Needs

Besides the large living room and dining room in the new plan, the Hubbards needed four bedrooms. One bedroom was lost by making the down-stairs bedroom into the new kitchen.

As a rule, a first-floor bedroom is desirable in a farmhouse. It is almost a necessity if a member of the household is ill or old. The Hubbards did not need a first-floor bedroom, however, because they planned emergency sleeping arrangements down-stairs.

Office space is needed for farm business. The Hubbards decided to make it out of the old kitchen opening off the living room. It is large enough for a day bed for use when there is illness or for extra guests.

The old summer kitchen, which served as a workroom only for a part of the year, was beyond repair. So they tore it down.

Some household jobs such as laundry should be taken out of the kitchen into a separate workroom. Such a room is also a good place for the men to wash up after coming in from work.

The Hubbards drew in the workroom back of the new kitchen on their tissue-paper plan. They labeled the old kitchen "office" (fig. 4).

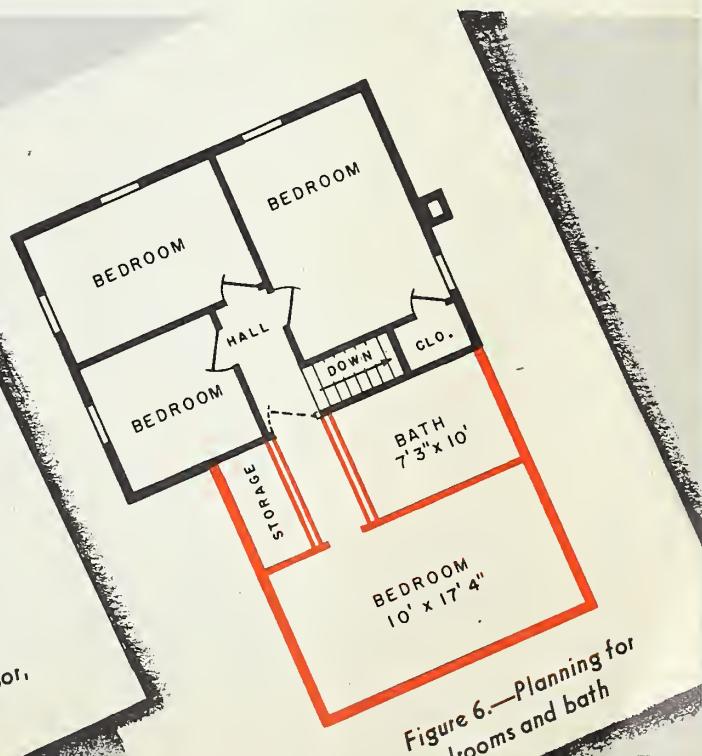
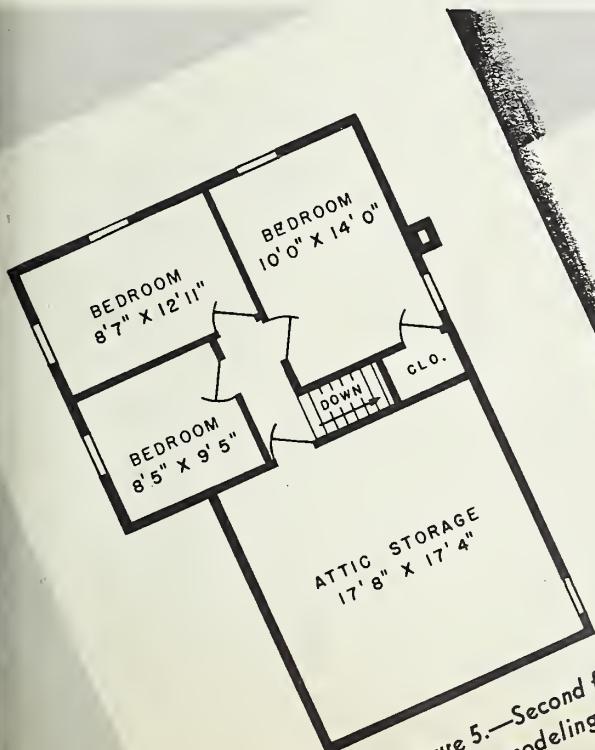
## Raising the Roof for Space

The Hubbards drew a plan for the second floor just as for the first floor. Notice that there are three small bedrooms and a big attic over the old dining room (fig. 5). The roof over the attic is too low, however, for anyone to stand up except in the center.

So the Hubbards decided to raise the attic roof. It needed reshingling anyway and raising it would provide the space for the bedroom lost down-stairs and for a bathroom. This alteration would not cost a great deal and would supply the needed space—a case of using one stone for two birds.

The next question was, how to divide the attic so as to get one big bedroom for twin beds and a bathroom. Also closets were needed for the present bedrooms and for linens and general storage.

The Hubbards decided they would put the bedroom across the far end of the old attic. This allows for windows on three sides, which will provide good ventilation. They placed the bathroom next to the stairs where it is close to all bedrooms. This plan allows space for two generous closets opposite the bathroom (fig. 6). One can be a needed bedroom closet. The other will provide storage for out-of-season clothing and bedding.



# Traffic Lanes

Examine the first-floor plan to see how the Hubbards will move in and out of their house and from room to room. The back door, you notice, leads into your workroom rather than the kitchen and keeps work centers free of traffic.

## Watch Your Stairs and Steps

Where is the best place for the basement stairs? Inside stairs will be more handy than the old ones outside. The best place for them is near the back door. Space beneath the Hubbards' new workroom was not dug out, so these stairs must land in the basement under either the office or the main part of the house. Some of the space for these stairs leading out of the workroom can be taken from the office, which is larger than necessary. This allows for headroom and a window on the stair landing.

Now, look at the stairs to the second floor. They are well placed, but too steep. Good stairs from first to second floor have risers of  $7\frac{1}{2}$  to  $8\frac{1}{2}$  inches

$7\frac{1}{2}$  is best. Treads for  $7\frac{1}{2}$ -inch risers should be 10 inches deep, plus a 1-inch overhang or nosing (fig. 7).

Basement stairs can be steeper. A good rule to follow is that the sum of the tread (less the 1-inch nosing) and the riser should equal  $17\frac{1}{2}$  inches.

The distance from first to second floor is 9 feet. That equals 108 inches. So, 108 divided by  $7\frac{1}{2}$  gives 14, the number of risers needed. There are 13 treads. Each tread being 10 inches, the total length of the stairway will be 130 inches, or 10 feet 10 inches.

The Hubbards found the old stairs only 7 feet 4 inches long. How can the needed length be provided? Notice that in the new plan (fig. 8) they extended the stairs to the partition between the new kitchen and the new workroom. Entrance to the stairs is provided through a passage between workroom and office. By this change they also have more direct access to the living room from the back door.

A door into the kitchen, where the old window was, permits direct passage from back door to kitchen (fig. 9). The red path in figure 9 is a traffic lane and the white space is all usable work

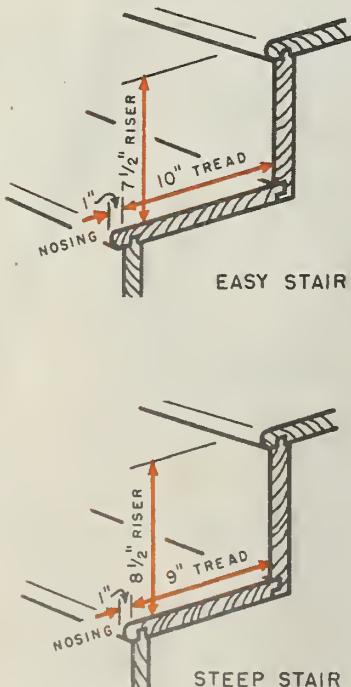


Figure 7

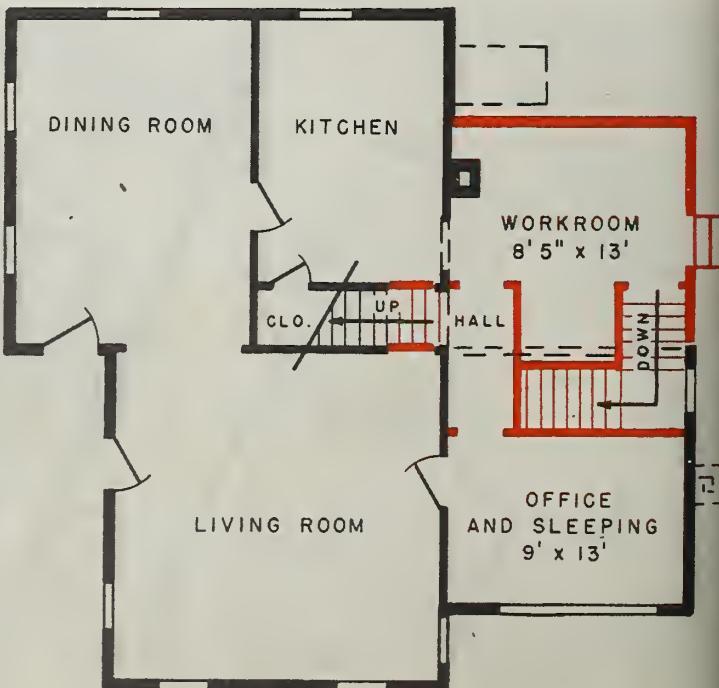


Figure 8.—Steps and stairs

area. Compare this traffic flow with that of the original house (fig. 10). See how much less distance has to be traveled to reach all rooms and the basement. Notice also how much less traffic passes through the work and living areas.

The new second-floor plan has good traffic flow also, with a central hall serving all rooms (fig. 6).

The over-all plan finished, the next step is to study each room separately to see whether it meets the family's needs.

The Hubbards drew up plans of each of their rooms at a scale of one-half inch equals a foot. At the same scale they cut out pieces of cardboard to represent all the various pieces of equipment and furniture. They moved these around on the plans to try out different arrangements.

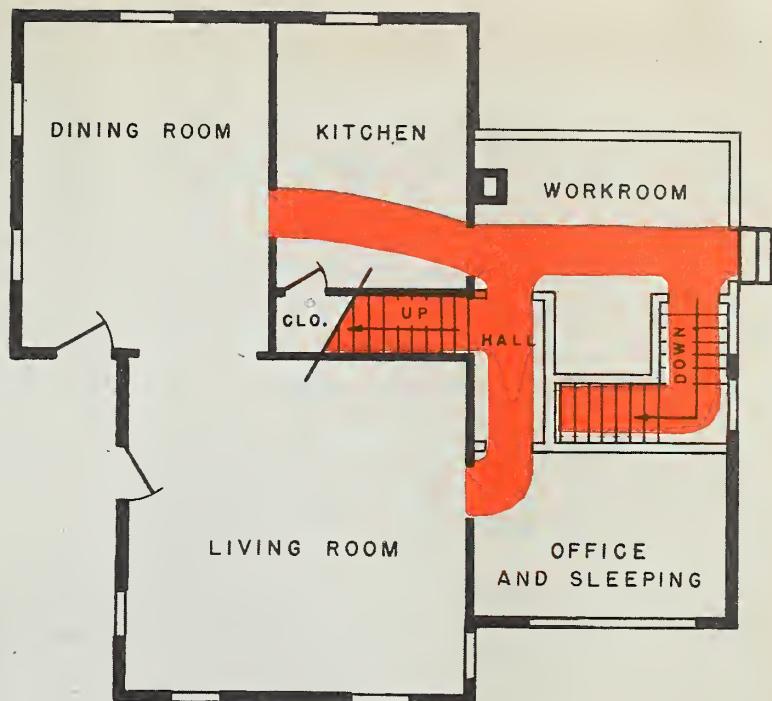


Figure 9.—Good traffic lanes in remodeled plan

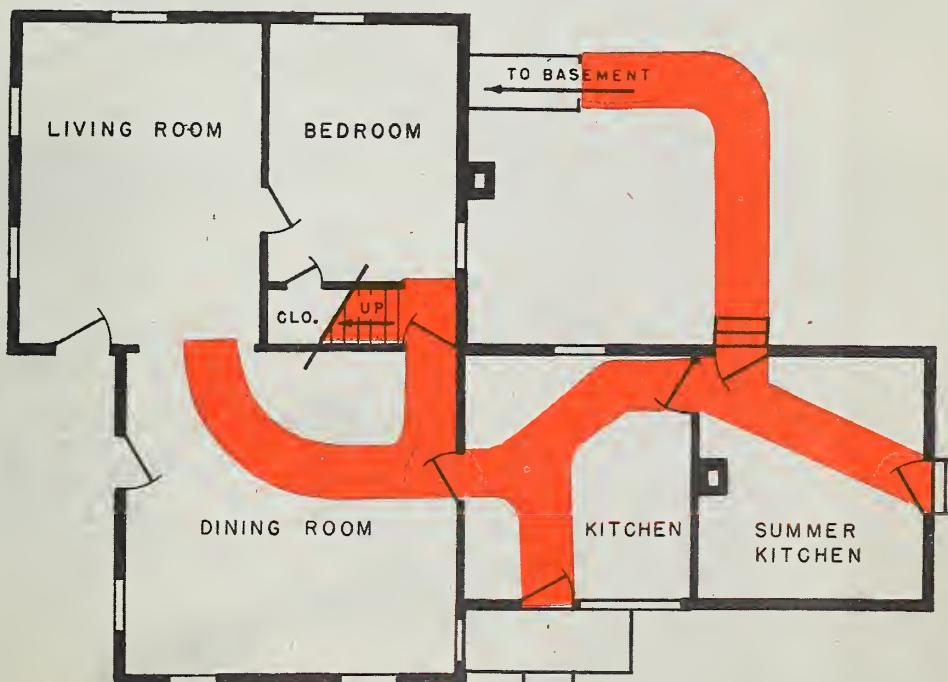


Figure 10.—Poor traffic lanes in original plan

# Kitchen Planning

Like the Hubbards, you will want a modern kitchen with labor-saving equipment and utilities. It will include:

- Sink with running hot and cold water.
- Electric, gas, or kerosene refrigerator.
- Gas, electric, or kerosene range.
- Built-in cabinets, with plenty of counter space for each activity and ample storage room.
- Good natural and artificial lighting.
- Adequate space for meal preparation and for canning and other food preservation, if done in the kitchen; furniture for eating occasional meals.

If your family is larger than the Hubbards' or you want to eat regular meals in your kitchen, you will need more space than theirs provides.

## The U-Type

Now look again at figure 9. Note all the usable kitchen space uncrossed by the traffic flow. The kitchen arrangement can be either L-type or U-type. The Hubbards used a variation of the U, which did not prove entirely satisfactory. The standard U arrangement would be better for most families (fig. 11). So let us consider it first.

No housewife wants to face the sun as she works. But the sink needs good lighting. Why not place it in the center of the north wall. The needed light can then be provided by moving the windows so they are directly over the sink.

The Hubbards' old bedroom, used for the new kitchen, is 10 feet wide and 14 feet long. By using the minimum-size double-bowl sink (see table), 44 inches is left on either side for working surface. The base cabinets on the east and west walls which form the U are each 24 inches wide. That leaves 20 inches for standing room on each side of the sink; 18 inches is the minimum.

## SIZES OF KITCHEN EQUIPMENT

	Length (inches)	Width (inches)
Sinks, single bowl.....	20-30	14-18
Sinks, double bowl.....	32-42	13-20
Electric or gas refrigerators		
(6-8 cu. ft.).....	28-33 <sup>1</sup>	25-30
Kerosene refrigerators.....	32-42	27-30
Gas, electric, gasoline ranges.....	36-42	24-27
Kerosene ranges.....	30-54	12-25

<sup>1</sup> Allow 3 inches more for clearance unless free at one end.

If you are right-handed, you will wash dishes from right to left. Counter space at left of sink will provide for draining and stacking clean dishes, with dish storage overhead. You will want to use counter at right of sink for stacking soiled dishes

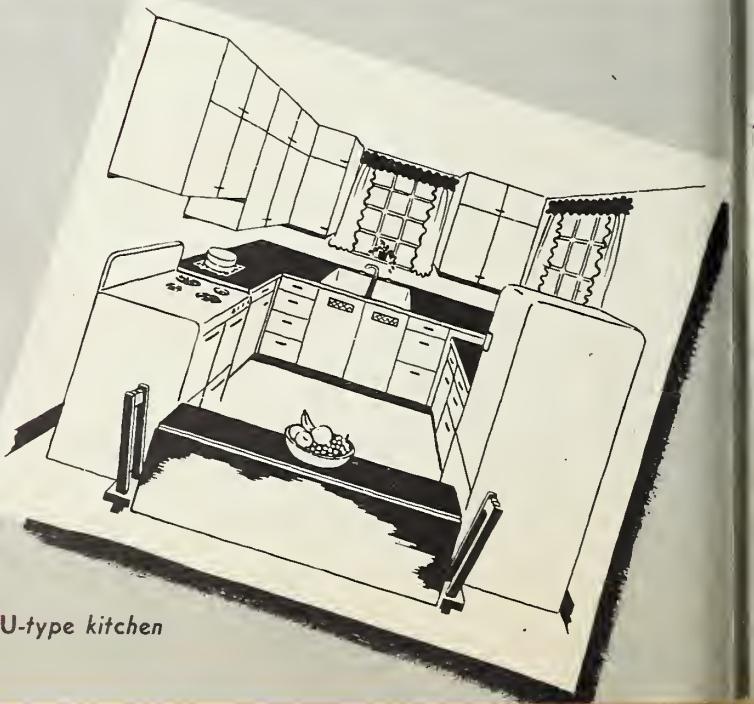
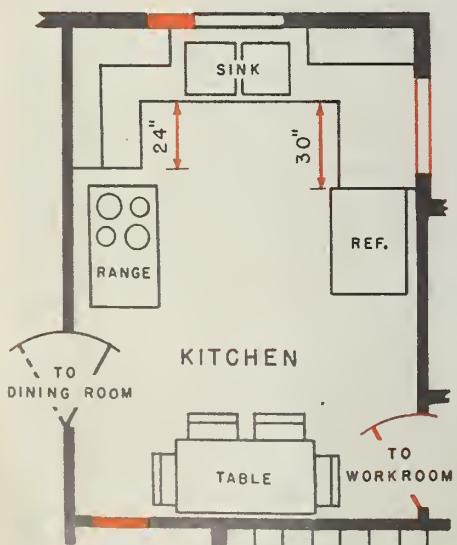


Figure 11.—U-type kitchen

and preparing food, with storage for staple groceries and cooking utensils above and below.

For convenience, the refrigerator ought to be next to the food-mixing counter; the range close to the dining room. Since an electric range is used, the old chimney can be removed. The refrigerator can then go on the east wall; the range on the west.

On the east wall next to the refrigerator, 30 inches of counter is available for mixing.

On the west wall, between range and sink counter, is a 24-inch base cabinet with a door large enough for easy access to the corner storage.

The oven on left side of range allows serving space on both sides of burners. For safety, 6 inches clearance is allowed at end and rear of range. Coal or wood ranges need greater clearances.

Next, consider the wall cabinets. In your own kitchen, as in this one, you may want 6 inches between wall cabinet and window for good spread of light. If more storage space is needed, cabinets can come to the window trim. Wall cabinets should be 14 to 16 inches above the counter.

Cabinets over ranges are less satisfactory than over counters. If such storage is necessary, leave 24 inches from bottom of cabinet to top of gas or electric range. Insulate bottom of cabinet as recommended by National Board of Fire Underwriters.

Wall cabinets over a refrigerator also are hard to reach, but are all right for articles not often

used. At least 12 inches clear space above the refrigerator will allow for air circulation and for putting in a larger refrigerator later.

The U-type kitchen allows space on the south wall for a small table with chairs. But the Hubbards have not found this location satisfactory for regular meals since it is in the traffic lane. As you work out your own kitchen plan, allow 30 inches of clearance at each end of the table in order to push back chairs. Allow 3 feet for passageway between table and range or other object.

### The L-Type

So much for the U-shaped kitchen. In the Hubbard house it gives more and better lighted work surface and more storage space than the L-shape. Some may, however, like the L-type better. The same general ideas apply in planning this type of kitchen as in the U-type.

The L-shaped kitchen (shown in fig. 12) allows dining space on the east wall near the window. Here it is out of the line of traffic between workroom and dining room.

In both types of kitchen good natural lighting and cross ventilation are provided by the two windows. Ceiling fixtures over sink and dining area give good general and local lighting. Electric outlets are needed for mixer, toaster, and other appliances. (See also Farmers' Bulletin No. 1838, Electric Light for the Farmstead.)

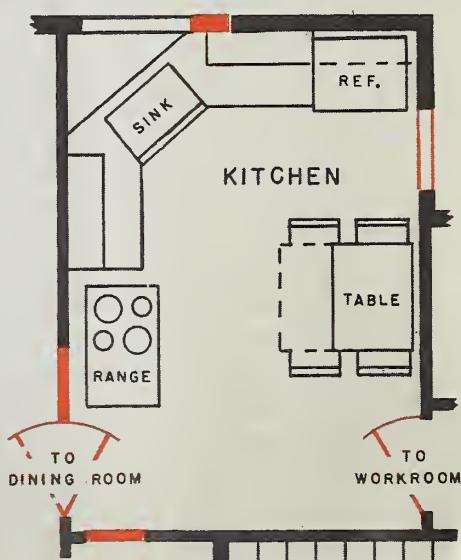


Figure 12.—L-type kitchen

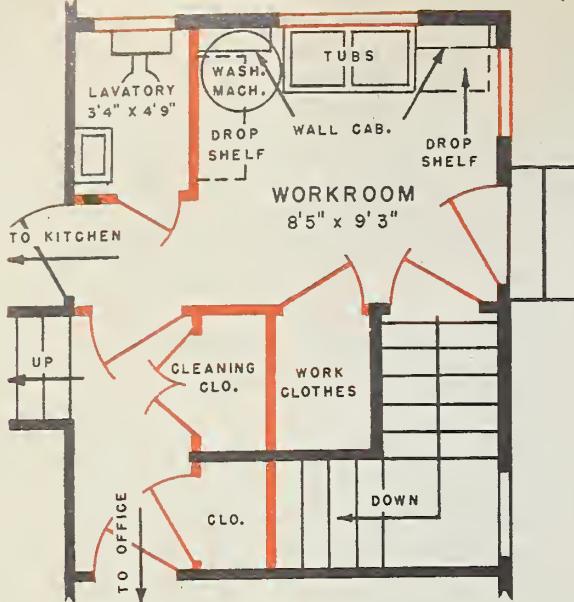


Figure 13.—Workroom and lavatory

## Workroom



The Hubbards planned to do their laundry in the basement, where there would be room for hanging clothes during damp, rainy weather. They also planned a first-floor workroom in order to have space for some of the odd jobs they did not want to do in the kitchen. They also made it a place where the men could wash up when they came in from the fields.

Many farm homemakers prefer to do their laundry in a first-floor workroom, more convenient to outdoor clotheslines and kitchen. The plan in figure 13 shows such a laundry.

In one corner is a small washroom with toilet and shallow washbowl. Space enough is left for laundry tubs and washing machine.

Standard tubs are usually 48 inches long and 24 inches wide. Washing machines range in size from 22 to 29 inches.

Where is the best place for washing machine and tubs? Notice that the north wall is out of line of traffic from the back to other parts of the house. Is not the north wall then the best place for the laundry equipment?

A large window above the tubs and washing machine gives even, natural light the year round.

More light is needed on dark days and early in the morning or late in the evening. A ceiling light

over the tubs will give general light throughout the room as well as the local light needed. The light can be controlled by a wall switch or a pull chain with an insulating link.

To the left of the tubs 33 inches is allowed for storage of the washing machine. On the lavatory partition, a 48-inch by 18-inch drop-leaf shelf is placed at a convenient height (32 to 38 inches) for sorting and dampening clothes.

To store laundry supplies there are wall cabinets on each side of the tubs. The cabinets are 8 inches deep and begin 50 inches above the floor.

If you are like the Hubbards, and most other families, you will need a place to prepare food for canning and preserving. The 30 inches to the right of the tubs is a good place for a drop shelf or table. A shelf 24 to 26 inches high is comfortable for most women to work at as they sit.

A "must" in the farm home is a place to hang work clothes. Off the workroom, within the L formed by the basement stairs, is space that can be used, and it is near the back door. It will keep the work clothes, work shoes, and boots out of the other rooms.

Another closet is needed to store cleaning and laundry equipment. It is built so it opens off the rear hall. Here it is easily reached from other parts

of the house as well as from workroom and kitchen. Here vacuum cleaner, brushes or brooms, clothes hamper, drying rack, ironing board, laundry basket, and other small laundry equipment can be stored.

More light is needed in the small hallway between kitchen and workroom. A second ceiling light is installed in front of the lavatory, and controlled by two switches—one at the back door and one inside the kitchen door.

Electrical convenience outlets in the right places for each piece of equipment are worth all they cost. It is better and cheaper to install them while remodeling your house than after the work is finished.

Minor changes will be needed in the workroom plan if a bathroom is to be installed on the first floor. An alternate plan of the workroom to show the necessary changes is therefore included in figure 18.

## Dining Room

The Hubbards' dining room is for eating, sewing, and playing games. You will probably use yours for somewhat the same things. Most farm families do. The dining room is about 13 by 17 feet. That is big enough for eating regular meals, as well as for occasional large family gatherings.

In arranging your dining room, remember you have to walk behind the chairs at mealtime. Allow at least 3 feet between table and wall or furniture, such as buffet. For more ample space, 4 to 5 feet is better.

You will also want ample space to store your best chinaware. Corner cupboards are one answer. A good example of this type of closet is described

in Farmers' Bulletin No. 1865, Closets and Storage Spaces.

Space on the first floor is needed in most houses for storing table leaves, sewing machine, games, card tables, and other equipment. The Hubbards provided for this by moving the door so the closet under the stairs opens into the dining room (fig. 14).

All women who sew want lots of good natural light. Three large windows in the Hubbard dining room provide this. For artificial light, a semidirect ceiling fixture was placed over the dining-room table. A pin-up lamp could be placed over the sewing machine if it were used against the wall.

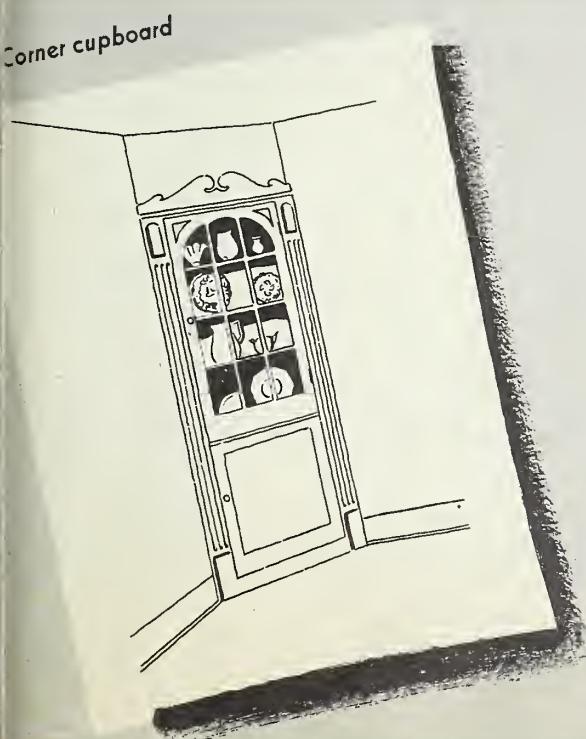
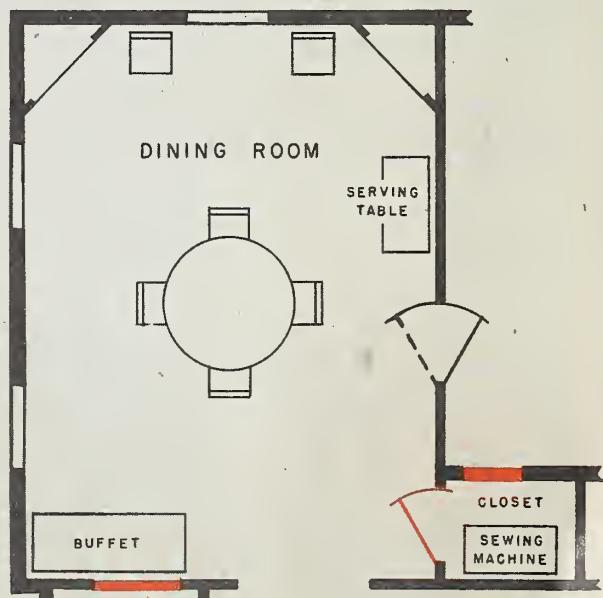


Figure 14



# Living Room

The Hubbard living room is really going to be lived in. Notice that this room is a good size and shape for the family's leisure and for parties (fig. 15).

When you plan the living room in remodeling your own house, think about its shape as well as the area and wall space. All these have a bearing on the arrangement. A room that is too long and narrow (over twice as long as wide) is usually hard to furnish unless two or more separate activity centers are planned.

Most families, like the Hubbards, want a fireplace. Many sizes and types can be built. Farmers' Bulletin No. 1889, Fireplaces and Chimneys, is a good source of information.

The Hubbards planned to have a central heating system. So, a new chimney was needed. The old unlined flue, removed when the kitchen was planned, was only  $8\frac{1}{2}$  by  $8\frac{1}{2}$  inches. Most central heating plants need one at least  $8\frac{1}{2}$  by 13 inches. And 13 by 13 inches is better. The separate flue for the fireplace should be 13 by 13 inches, if the fireplace is 3 feet 6 inches wide or more. Both flues ought to be lined with clay tile.

In the Hubbard living room there are three places for a new chimney and fireplace—the west, south, or north wall. The north wall was best, because an inside chimney costs less than one on an outside wall. Here it was in a central place but

not in the way of anything on the second floor. The furnace could then be centrally located, with shorter air ducts of more equal length. The heat from a central chimney helps warm the house.

At the right of the chimney in the Hubbards' living room there was space for bookshelves with cabinets below for magazines and games. In the archway wall between living and dining room, there was more space for bookshelves.

The Hubbards used cut-outs to help decide arrangement of furniture to look well and make good use of the space. They planned first for the two large pieces—the piano and sofa. A piano will keep in tune better if it is against an inside wall, and the only suitable spot was on the east side. The room already had good light and cross ventilation, so they blocked up the east window to get more wall space. The sofa was then placed between the windows on the south wall, where it would face the fireplace.

Two more things were needed: A place for guests' wraps and a way to keep blustery winds out of the living room when the front door is opened. A vestibule in one corner of the porch provides for both (fig. 19).

The Hubbards spend more leisure time in the living room than any other room. A lot of that time is spent reading. Portable lamps at each place where members of the family will be reading give good light. Convenience outlets every 20 feet or closer will allow for adjusting lights when furniture is moved. And it is moved quite often in most living rooms.

# Office Space

A good farm office needs plenty of light, comfortable chairs, a desk, filing cabinets, and bookcases (fig. 15).

Cabinets with bookcases above them make a good place for bulletins, books, and records. The cabinets in the Hubbard house are 1 foot deep and have doors. Bookshelves are 9 inches deep and extend to the ceiling on each side of the windows.

Good lighting is needed in any office. In the Hubbards' there are plenty of windows. If the desk is at the west end of the south wall, light comes in

over the left shoulder, which is the ideal arrangement. A central ceiling fixture and desk lamp give good artificial light.

On the north wall there is room for a day bed. So the office may serve as a bedroom for a guest or if someone is ill. A closet over the basement stairs just outside the office gives a place for clothing.

In the corner is a comfortable chair for reading. The room so furnished also provides a quiet place for Mr. and Mrs. Hubbard in the evening when the young folks entertain.

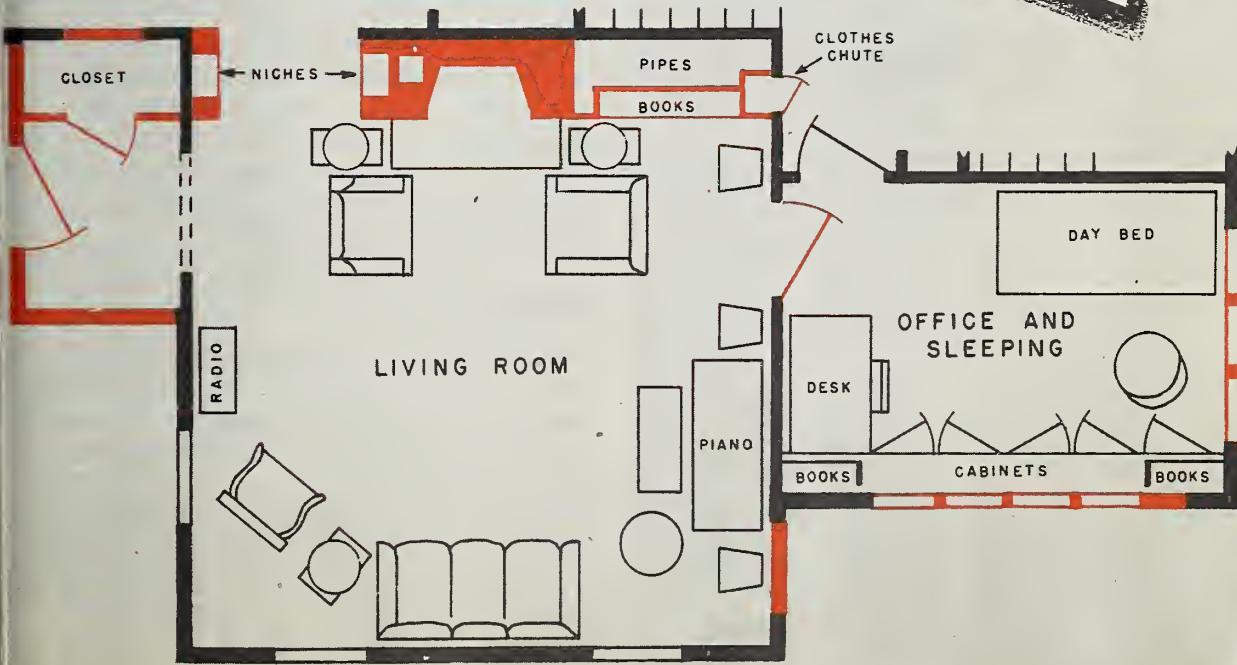
Living room



Office



Figure 15





## Bedrooms

Most people like large bedrooms. They should be large enough to hold the necessary furniture and to provide space to dress and move around easily.

You, like the Hubbards, will want to keep the following points in mind in planning your bedrooms:

Allow for not more than two people to sleep in one room.

Do not have the only place for a bed directly under a window.

Leave at least 15 inches on the wall side of the bed, where possible, and 24 inches at the foot. It will be easier then to make the bed. If a bed has to be placed in a corner, allow space so it can be pulled out from the wall to be made up.

Have closet space for each person in the room, and storage space for shirts, underwear, and similar clothing. In front of a chest, 36 inches is needed for clearance when drawers are pulled out.

The Hubbards found that twin beds could be used in bedroom No. 2 without changing the location of windows or doors (fig. 16).

All their bedrooms have cross ventilation. Bedroom No. 1 has through ventilation from end to end, which is better yet. You will want this in your bedrooms, too, on hot summer nights.

In the Hubbard house, there are enough windows to give good natural light in all bedrooms. For artificial light they put a ceiling fixture in every room, operated by a switch just inside the door. They provided convenience outlets for local lighting over the dressing table, bureau, and beds. One outlet between twin beds will take care of light for both.

### Bedroom Closets

It does not pay to skimp on closets. If you ask many women what they would change about their houses, they often say, "I would put in more closet space!" So, put plenty of closets in your bedrooms, as the Hubbards did in theirs.

Consider now bedroom No. 1 in the Hubbard house. For a well-balanced room two closets are used, one on each side of the west-wall window.

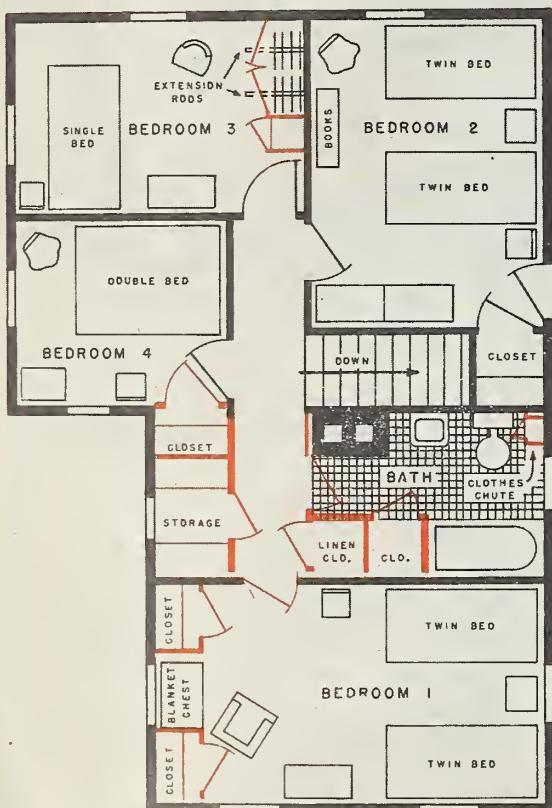


Figure 16.—Second-floor remodeled

Each is 2 feet deep so clothes can be hung on a rod parallel to the door. That is a good principle to follow in planning any closet. Between the closets and under the window the Hubbards built a window-seat chest for blankets. You may prefer drawers or a cabinet with trays for shirts, socks, and other clothing.

The closet in bedroom No. 2 was made smaller than in the original plan when the stairs were changed. It is, however, still a good-sized closet.

Bedroom No. 3 was so small that there was not room for a closet of the recommended depth of 2

feet. The Hubbards used space along the wall next to bedroom No. 2 for a shallow closet 18 inches deep, holding two extension rods. This closet is not in the way of placing furniture. Space at the end was used for a small closet with floor-to-ceiling shelves.

Part of the space shown for closets off the hall was used for a closet for bedroom No. 4. It also was planned so clothes can be hung on a rod parallel to the door. Shelves were built over the rod. Note that there is room for a 28-inch door, which makes every part of the closet easy to reach.

## Bathroom

The Hubbards planned their bathroom carefully, for plumbing is expensive to install.

All through the planning of their house they kept in mind the location of pipes. In cold weather, pipes in outside walls may be in danger of freezing. So it is best to keep them in inside partitions. The soil stack carrying waste from plumbing fixtures is a pipe 3 or 4 inches in diameter. If it is in a partition, 6-inch studs have to be used.

The waste pipe under the floor from the water closet to the soil stack has to slope one-fourth inch for each foot of length. It also is a large pipe. Therefore the water closet is placed as close to the soil stack as possible and in a position so that the waste pipe runs parallel to the floor joists. Otherwise, framing of the floor joists is more difficult.

It was not possible in the Hubbard house, but placing the bathroom next to or over the kitchen or workroom so all fixtures can use the same soil stack will save some money.

In planning your remodeling, you want a septic tank and usually a tile disposal field, unless you can connect with a sanitary system. Farmers' Bulletin No. 1950, Sewage and Garbage Disposal on the Farm, tells how to locate and build a sewage-disposal system.

## Placement of Fixtures

The Hubbards had all these plumbing principles in mind before they placed the bathroom fixtures. They selected the south wall for the bathtub. The water supply and waste end of the tub

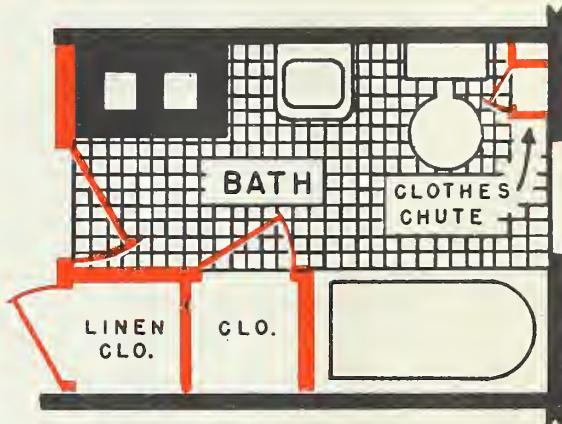


Figure 17.—Second-floor bath

was so placed that it is not against an outside wall and is thus easily accessible. The waste pipe was carried across the room under the floor, diagonal to the joists, to connect with the soil stack. The connection from bathtub and lavatory to soil stack can be longer and less direct than that from the water closet without causing stoppage troubles.

## SIZE OF BATHROOM FIXTURES

	Length along wall	Stands out from wall
Bathtubs.....	4 to 6 ft.	2 $\frac{1}{2}$ to 3 ft.
Lavatories.....	18 to 30 in.	15 to 24 in.
Water closets.....	20 to 23 in. (tank)	27 to 30 in.

The bathtub the Hubbards selected was 30 inches wide and 5 feet long. Between tub and front end of water closet there was then 24 inches, which is ample. The minimum need is 18 inches.

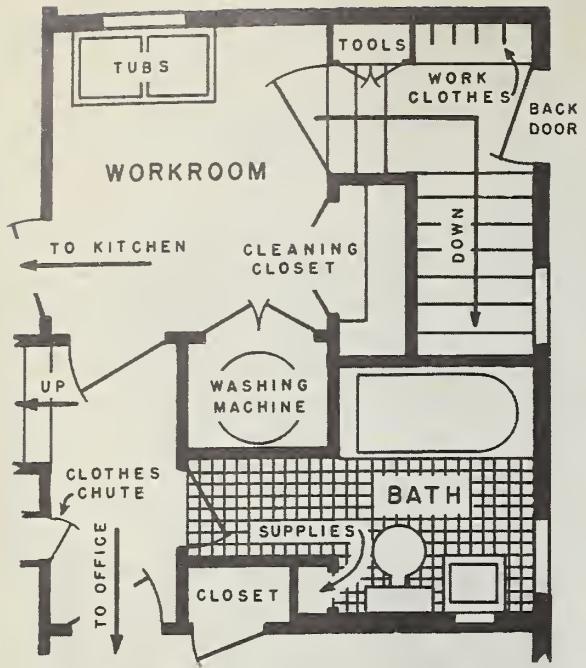


Figure 18.—First-floor bathroom and alternate workroom

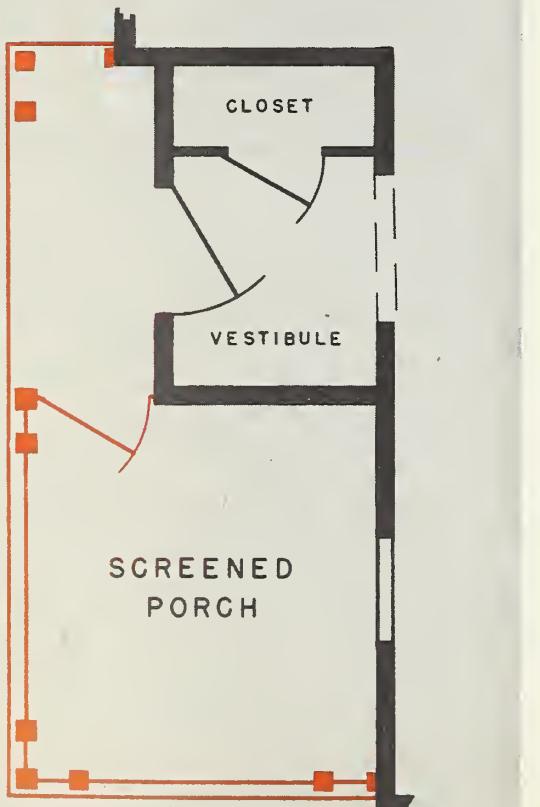


Figure 19.—Porch and vestibule

Between tub and west wall there was space for a closet for towels and cleaning supplies. The tub was thus recessed between two walls, so a shower could be installed. Another closet opening on the hall was also built for linens (fig. 17).

Ordinarily it is cheaper to place all fixtures along one wall. The Hubbards found it better to place water closet and lavatory on the wall opposite the bathtub. Then the soil stack could be next to the water closet and go down through the space back of the living-room bookcases.

When planning your bathroom, allow 15 inches from center of water closet to any wall beside it and 14 inches from center to any plumbing fixture. These are minimum standards which the Hubbards observed. That left space for the lavatory between water closet and chimney. A lavatory 18 inches deep and 20 inches long is a good, medium size. Only 2 inches clearance is necessary at the end of the lavatory to allow for cleaning, and in the Hubbards' bathroom there is more than this.

Notice in the Hubbards' plan that boxing-in the soil stack makes a slight jog in the wall. Here a laundry chute fits nicely. It runs in the space back of the bookcases and comes out in the first-floor hallway close to the workroom.

A window in the east wall furnishes good light and ventilation. A medicine cabinet, with mirrored door, was placed over the lavatory with bracket lights on each side. They are controlled by a switch placed just inside the door.

Had the Hubbards planned for a bathroom on the first floor, figure 18 shows how it could have been installed.

## Porch

The Hubbards wanted a porch mainly to shelter their front entrance and to provide space for two or three chairs. Note that their porch is in the area between the L and the end of the house (fig. 26). A space  $3\frac{1}{2}$  feet wide extending the length of the vestibule is enough to shelter callers waiting for the door to be opened. The rest of the porch is screened for summer use.

If you are interested in a porch for living space—dining, sleeping, work, and recreation—you will want it larger than the one the Hubbards planned. Suit the size to the activities.

# *Basement*

Planning of the basement of a house is based on the family needs and uses for the space, and in this respect does not differ from the planning of other rooms.

The first consideration in the basement is the space for the furnace. Features of the different types are discussed in the following section on heating. The kind of fuel used and amount usually bought at one time are points to remember in planning its storage. Coal and wood bins ought to be tight to keep dust and dirt out of other parts of the basement.

The Hubbards use their basement for doing the family laundry, as it makes a good place to dry clothes in bad weather. A laundry room in the basement is necessary in any house if there is no space for it on the first floor. In the South, however, many families make room for doing their laundry on the back porch.

A basement laundry room should be walled off from the rest of the basement to keep out dust, and should have good light from a window. Wherever the laundry is, access to the drying yard should be direct and easy. Climbing stairs with heavy baskets of wet clothes is hard work, so if you plan for a basement laundry, have the entrance at ground level if possible.

The Hubbards also use their basement for storing canned goods and vegetables from the garden. Most farm families need similar storage space. The storage ought to be as close to the basement stairs as possible in order to save steps. Vegetables

need a dry cool place. It is a good idea, therefore, to place the storage against an outside wall where it can be ventilated either by use of a louvered—or slatted—door or window that can be closed in freezing weather. Avoid running hot-air ducts through the storage or placing it where it might be heated by the furnace.

The basement, near the steps and food storage room, also is a good place for the home-freezer storage unit. A freezer needs floor space 6 to 11 feet long and 2½ to 3 feet wide, depending on the model selected.

As the Hubbards did not have children to consider, they did not plan for a playroom in their basement. In families where there are children, however, a warm, dry basement is an excellent place for them to play in bad weather. If possible, locate the playroom in a corner of the basement where there are windows on two sides. The same room can also be used for adult games and recreation. If heater pipes to the upper floors run through the room, they will help to provide the needed heat, though it may be better to install at least one radiator or hot-air register.

The Hubbards' basement is light and dry, so they found it a good place for a workbench where small repair jobs can be done.

In planning to remodel your own house, you may want a basement washroom, which may include a shower, if one cannot be installed on the first floor off the workroom. Placement of washroom and shower, will, of course, depend on location of the plumbing pipes from the facilities on the upper floors. Be sure the basement floor is higher than the inlet to the septic tank or cesspool to permit disposal of waste.

# *Attic*

The slope of the roof on the Hubbard house is slight, so there is little space in the attic for storage. In many other houses, however, the attic can be used for storage of articles that are not used all the time. Among these are awnings, screens, storm windows, out-of-season clothing, trunks, and other things that might rust or mold if stored in a basement.

Tight walls around attic storages help keep out dust and dampness. They also make it easy to use moth preventives. Shelves and rods for hangers make the attic storage more usable for clothing.

Permanent stairs make it easy to get to and from an attic. If it is not possible to build them, pull-down stairs are safer and easier to use than a ladder.

# Heating System

The Hubbard house had a gravity hot-air system which did not give adequate heat. They decided to thoroughly insulate the house and to consider various types of heating systems. They found, however, that they could convert their old system to forced air by putting in a fan and making other alterations. These changes were less costly than an entirely new system.

The question of how to heat their house was one of the first problems the Hubbards faced. They needed the answer to do the over-all planning job. The type of system used may affect arrangement of rooms as well as of furniture and equipment in the rooms. The cost had to be considered in relation to the other changes that were necessary.

Changing the heating system may be a part of any remodeling job. A part of the planning is to decide before the remodeling starts just where furnace ducts or pipes, registers, or radiators are to be placed. If stoves, circulating heaters, floor or pipeless furnaces are to be used, their location and chimney connections ought to be planned before any work is started. Certain principles apply in using each type of system.

## Hot-Air Systems

Place a gravity-type hot-air furnace (fig. 20) in the basement. Allow enough space above the top of the furnace for air ducts to slope upward. The pipes for this type of system are large and take a lot of space. Study their placement closely if the basement is to be used for other purposes.

Both hot- and cold-air registers for gravity hot-air furnaces are large and fit in the floor or at the baseboard level. Consider this in planning where to place furniture and rugs. Registers must not be blocked.

Furnaces that force warm air through ducts by means of a fan can be placed on any floor (fig. 21). They are therefore suited for houses without basements. The ducts take up less space than those for the gravity type. Horizontal ducts from a forced-air furnace on the first floor can be put parallel

with and between ceiling or floor joists where they are not exposed.

Hot-air registers for forced-air furnaces are usually put high in the walls. Registers that return cooler air to the furnace are placed low, usually under windows.

Vertical ducts for both types of furnaces are either boxed-in or put inside partition walls.

## Hot-Water and Steam Systems

The boiler for a gravity hot-water system, like the gravity hot air, will be located in the basement or below areas heated.

Another type of heating system is the forced hot-water type (fig. 22). The boiler for this system can be placed on any floor.

Usually hot-water radiators are placed under windows to give better heat distribution. This also allows more wall space for furniture. Vertical pipes for both types of hot-water systems may be exposed in the rooms if necessary.

The boiler for a steam heating system will, of course, be placed in the basement. Points to think about in placing radiators and running pipes in a steam system are the same as for the hot-water type.

## Other Heating Systems

Other choices in heating equipment are the pipeless furnace (fig. 23) or one of the newer floor furnaces. In either case, you will want it centrally placed. The floor register for either is usually large and must not be covered with a rug.

A circulating heater belongs in a central place if it is to heat more than one room. Placed in a central hall in a small house, a heater of this type will heat a number of rooms when inside doors are left open. When doors are closed, use transoms to allow for some heat distribution.

Fire can be especially disastrous on a farm. If heating stoves are used, allow at least 3 feet clearance from partitions or woodwork that might catch fire easily. Eighteen inches will be enough if the wall is covered with metal or other nonburning material.

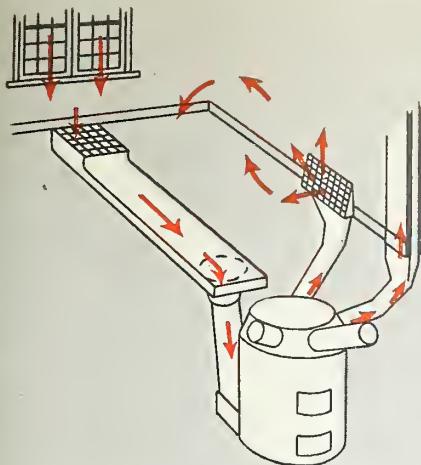


Figure 20.—Gravity warm-air system

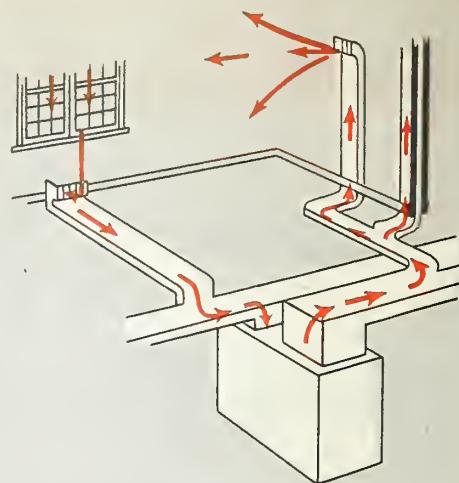


Figure 21.—Forced warm-air system

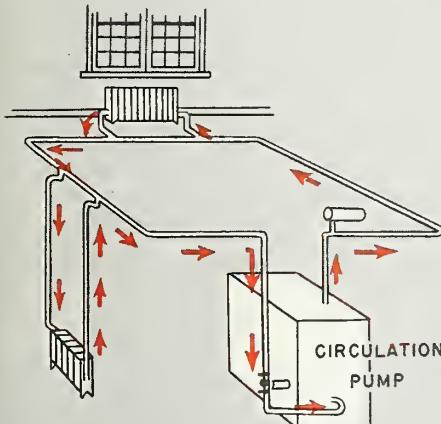


Figure 22.—Forced hot-water system

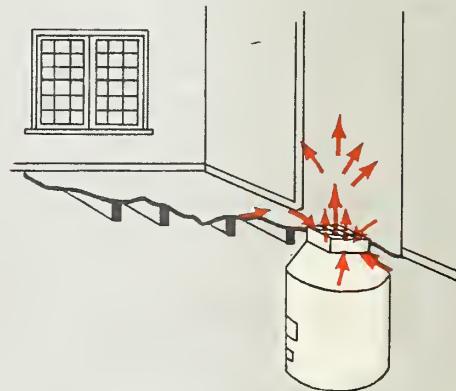


Figure 23.—Pipeless furnace

## Electric Wiring

Fortunate is the home owner whose house has a good wiring plan and plenty of outlets for electrical equipment. All through the planning for remodeling, the Hubbards kept this point in mind. Likewise, in your planning, you will be thinking of the placement and use of appliances.

Wiring usually is run within interior partitions and between floors. Wires often can be "fished" through between studs and joists. In some old houses with solid interior partition walls, surface wiring may be necessary.

Plan wiring to make it safe and convenient. See Farmers' Bulletin No. 1838, Electric Light for the Farmstead. Where it is difficult to use regular wall outlets, "plug-in" strips at the top of the baseboard are very convenient.

The best place for an electric switch is on the wall near the knob of the most-used door, about 48 inches above the floor. Here it can be reached without having to cross the room in the dark. In rooms with more than one entrance door, two switches are often used.

# Exterior and Interior Design

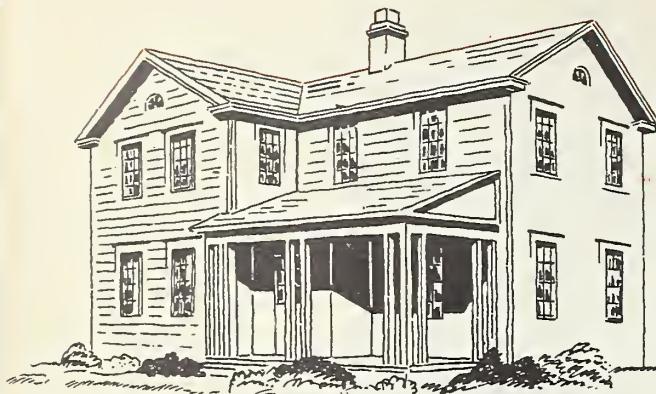


Figure 24.—Good exterior design

The Hubbard house originally had no fancy trimmings or awkward projections. Its proportions were good. So they kept the remodeled house as simple as the old one. Fortunately, many old farmhouses, especially those built more than 50 years ago, are excellent in this respect.

When the roof was raised over the second floor, the Hubbards kept the pitch the same as that over the rest of the house. Roofs that join should always

have the same pitch. It looks better and simplifies framing. A simple cornice detail is kept in the remodeled house as in the old one.

Plan to have the outside of any house reflect the interior arrangement. Avoid fake gables or other devices that make the house appear what it is not. It is a good idea also to avoid using materials that imitate more expensive ones.

Avoid heavy detail, such as oversize porch columns. No column or pillar should be any larger than is needed to hold up what it is supporting. Simple columns also cost less.

Figure 24 shows good exterior design. Notice windows and doors are well spaced and in line. All second-floor windows are about the same size, although slightly smaller than the first-floor windows. In addition, the simple porch columns and good roof lines add to the general pleasing effect.

When you plan the remodeling of your own house, consider how it will look when finished. A drawing similar to that shown (fig. 24) will help you visualize the completed job. If you leave appearance to chance, you may be disappointed.

## The Completed Plans

Now, how do you feel about remodeling? Are you encouraged or discouraged? As you followed, step by step, the Hubbards' plan for remodeling their farmhouse, has it not sounded quite simple? Planning the remodeling of your own house can be just as easy if you follow the basic principles and ideas suggested and approach the job as they did; that is, step-by-step, carefully, thoroughly.

Look again at the completed plans of the Hubbards' remodeled house (fig. 26). Compare them, point by point, with the original plans (fig. 25). Are the new floor plans any better than the old ones? The Hubbards believe they are, and many of those who have seen their home in Wisconsin agree with them.

### Consider the Costs

How much will remodeling cost? That is, of course, something everyone must consider.

The remodeling of the Hubbard house cost about \$3,500. Costs will be higher now, however, than before the war. The Hubbards hired much of the work done on their house, but you can perhaps save by doing some of your own work. Possibly you need not do as complete a job as the Hubbards, or can do only part of the work now.

Even if you make only minor changes now, however, it will be best to go through all the steps of planning. In that way you may avoid mistakes that might be costly later if more changes are made.

### The Last Word

Now you are ready to begin planning to remodel your own house to fit your family's needs. The job will be fun. Take your time. Plan for the future as well as for the present. Put your plan on paper. With that, you are on your own and on the way to a more livable home.

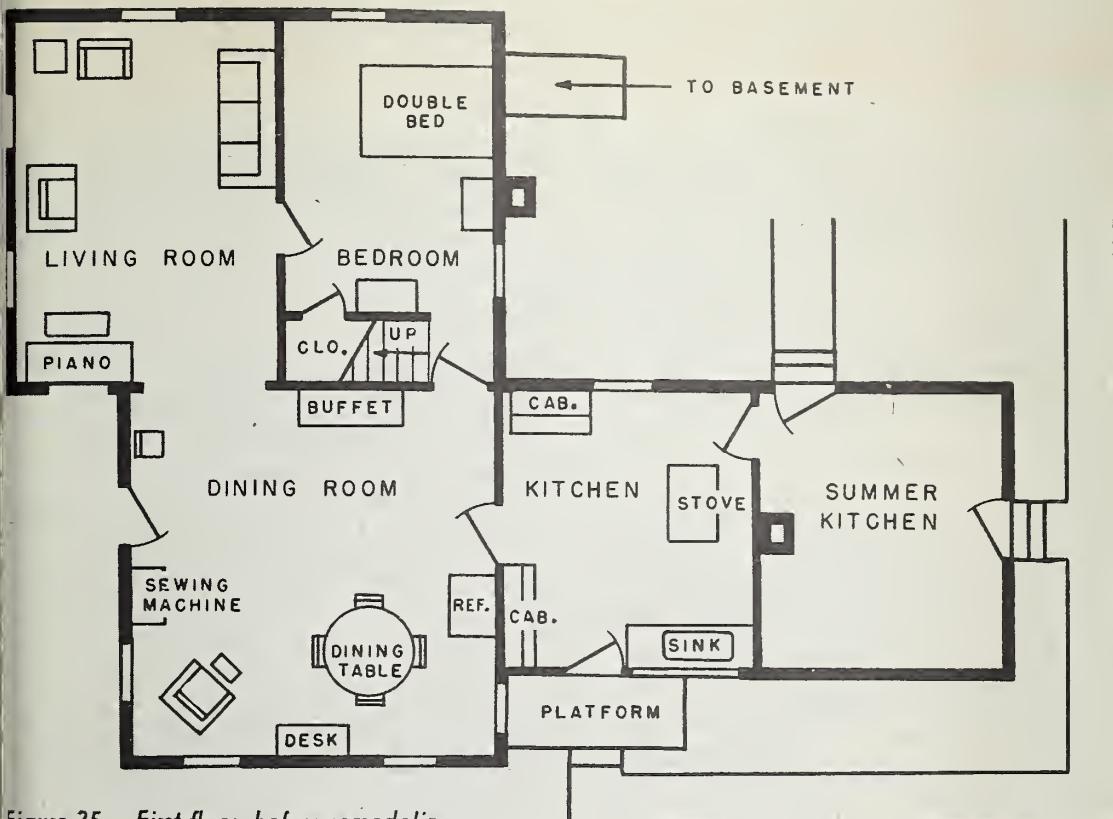


Figure 25.—First floor, before remodeling

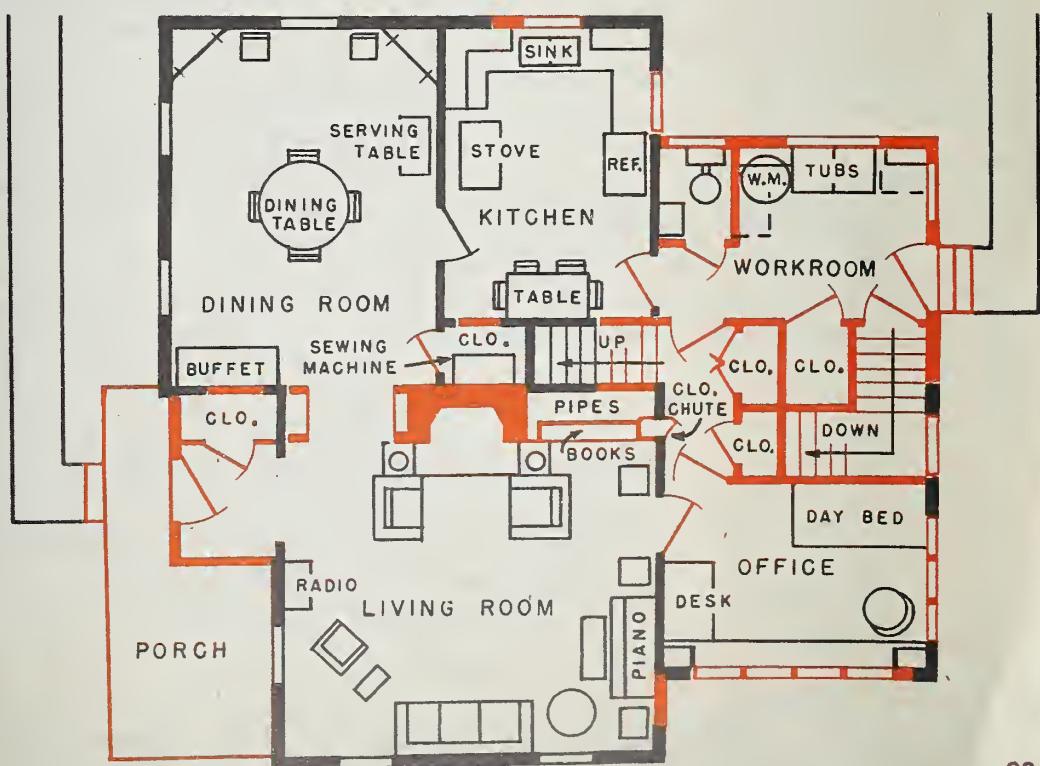


Figure 26.—First floor, after remodeling

# Check List for Your Remodeling Plan

## *Have you planned—*

- Enough rooms for your family's needs?
- Rooms neither too large nor too small?
- Good lighting and ventilation in all rooms?
- Good exposure and view for living and work areas?
- Doors and windows well-located in all rooms for placing furniture?
- Closet for men's work clothes near the back door?

## *Traffic lanes—*

- Entrances convenient to the drive?
- All rooms easily reached from the back door?
- Work and living areas free from traffic?
- Bedrooms and bath opening from a hall?
- Stairways and halls wide enough?
- Well-proportioned stairs?

## *Kitchen and work areas—*

- Work areas arranged to save steps?
- Enough space for more than one worker?
- Storage space for supplies and equipment where they are used?
- Place for men to wash other than kitchen sink?

## *Dining space—*

- Convenient to kitchen serving area?
- Enough seating space for everyone regularly served and for company?
- Storage nearby for dishes, silver, and linen?

## *Living space—*

- Comfortable space with equipment and storage for reading, writing, studying, farm business, sewing, games, hobbies, and entertainment?

## *Sleeping space—*

- Separate rooms for parents, boys, and girls?
- Not more than two persons to a room?
- Provision for aged or ill on first floor?
- Space for overnight guests?
- Enough wall space and clearance around furniture?
- Enough storage space for clothing and bedding?

## *Utilities—*

- Adequate water supply and sewage disposal?
- Hot and cold running water in kitchen, bath, and laundry?
- A suitable heating system?
- Properly located registers or radiators?
- Enough well-located lighting fixtures, switches, convenience outlets?

## *Appearance—*

- A pleasing appearance inside and outside?
- Good proportions, simple lines?

## *Cost—*

- Is the cost of remodeling less than for building new?

## *Issued by*

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